VSSAF3M63

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Vishay General Semiconductor

Surface-Mount TMBS® (Trench MOS Barrier Schottky) Rectifier



LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS			
I _{F(AV)}	3 A		
V _{RRM}	60 V		
I _{FSM}	80 A		
V _F at I _F = 3 A (125 °C)	0.48 V		
T _J max.	175 °C		
Package	SlimSMA (DO-221AC)		
Circuit configuration	Single		

FEATURES

- Very low profile typical height of 0.95 mm
- · Ideal for automated placement
- Trench MOS Schottky technology
- · Low power losses, high efficiency
- Low forward voltage drop
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available - Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

TYPICAL APPLICATIONS

For use in high frequency inverters, freewheeling, DC/DC converters, and polarity protection in commercial, industrial, and automotive applications.

MECHANICAL DATA

Case: SlimSMA (DO-221AC) Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - halogen-free, RoHS-compliant Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 gualified

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 and HM3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	VSSAF3M63	UNIT	
Device marking code		3M63		
Maximum repetitive peak reverse voltage	V _{RRM}	60	V	
Maximum DC forward current	I _{F(AV)} ⁽¹⁾	2.6	Α	
	I _{F(AV)} ⁽²⁾	3	A	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	80	А	
Operating junction temperature range	T _J ⁽³⁾	-40 to +175	°C	
Storage temperature range	T _{STG}	-55 to +175	°C	

Notes

⁽¹⁾ Free air, mounted on recommended copper pad area

⁽²⁾ Mounted on 30 mm x 30 mm pad area

⁽³⁾ The heat generated must be less than thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{0,JA}$





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ELECTRICAL CHARACTERISTICS (T_J = 25 °C unless otherwise noted)						
PARAMETER	TEST CO	TEST CONDITIONS		TYP.	MAX.	UNIT
Instantaneous forward voltage	I _F = 1.5 A	T, − 25 °C	V _F ⁽¹⁾	0.5	-	V
	I _F = 3 A			0.56	0.62	
	I _F = 1.5 A	– T _J = 125 °C		0.4	-	
	I _F = 3 A			0.48	0.55	
Reverse current	V _B = 60 V	T _J = 25 °C T _J = 125 °C	I _R ⁽²⁾	-	0.005	- mA
	v _R = 60 v	T _J = 125 °C		0.4	1.5	
Typical junction capacitance	4.0 V, 1 MF	4.0 V, 1 MHz		575	-	pF

Notes

 $^{(1)}\,$ Pulse test: 300 μs pulse width, 1 $\,\%\,$ duty cycle

 $^{(2)}$ Pulse test: pulse width $\leq 5\ ms$

THERMAL CHARACTERISTICS ($T_A = 25$ °C unless otherwise specified)				
PARAMETER	SYMBOL	VSSAF3M63	UNIT	
Typical thermal resistance	R _{0JA} (1)(2)	115	°C/W	
	R _{θJM} ⁽³⁾	12	C/W	

Notes

 $^{(1)}\,$ Free air, mounted on recommended PCB, 2 oz. pad area; thermal resistance $R_{\theta JA}$ - junction to ambient

 $^{(2)}$ The heat generated must be less than thermal conductivity from junction-to-ambient: $dP_D/DT_J < 1/R_{\theta JA}$

 $^{(3)}$ Mounted on 30 mm x 30 mm pad area, $R_{\theta JM}$ - junction to mount

ORDERING INFORMATION (Example)						
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
VSSAF3M63-M3/H	0.032	Н	3500	7" diameter plastic tape and reel		
VSSAF3M63-M3/I	0.032	I	14 000	13" diameter plastic tape and reel		
VSSAF3M63HM3/H ⁽¹⁾	0.032	Н	3500	7" diameter plastic tape and reel		
VSSAF3M63HM3/I ⁽¹⁾	0.032		14 000	13" diameter plastic tape and reel		

Note

(1) AEC-Q101 qualified



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RATINGS AND CHARACTERISTICS CURVES ($T_A = 25$ °C unless otherwise noted)

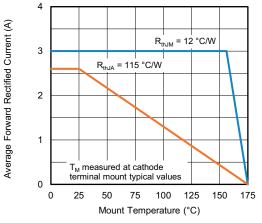


Fig. 1 - Maximum Forward Current Derating Curve

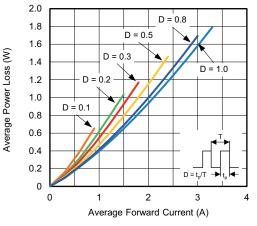


Fig. 2 - Forward Power Loss Characteristics

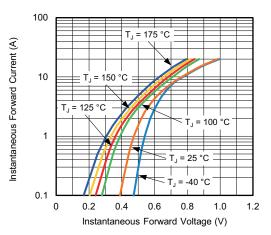


Fig. 3 - Typical Instantaneous Forward Characteristics

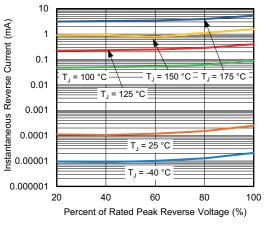


Fig. 4 - Typical Reverse Leakage Characteristics

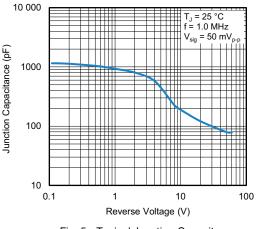


Fig. 5 - Typical Junction Capacitance

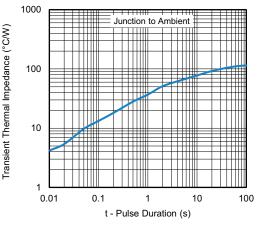


Fig. 6 - Typical Transient Thermal Impedance

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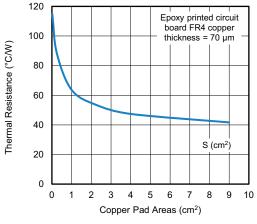
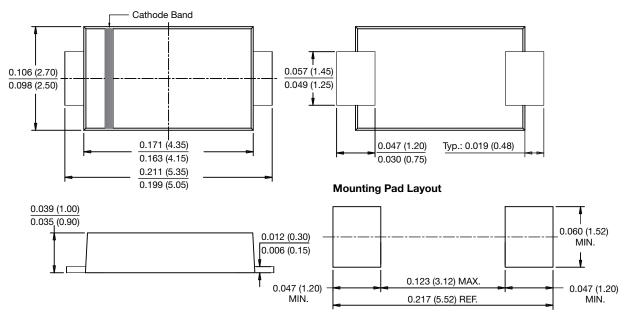


Fig. 7 - Thermal Resistance Junction to Ambient vs. Copper Pad Area

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



SlimSMA (DO-221AC)



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